U. S. Department of Agriculture
Natural Resources Conservation Service

TECHNICAL NOTES

STATE OFFICE STILLWATER, OKLAHOMA 74074

ECOLOGICAL SCIENCES TECHNICAL REFERENCES FOR IN-SERVICE USE ONLY

Range OK-14 June 7, 2002

RE: Guidance for Determining Brush Priorities

The attached guide can be used to determine percent canopy cover and number of plants per acre when determining brush priorities. These are simple methods to use for determining the extent of brush problems for conservation planning, program rankings, monitoring and providing treatment alternatives.

Also attached is a worksheet (in EXCEL) that can be used for the inventory and documentation. A set of instructions and an example are provided. The example is based on the examples provided in the guidance.

/s/ Les Conner acting for

M. DARREL DOMINICK
State Conservationist

Enclosures

DIST: A, F

Guidance for Determining Percent Canopy Cover and Number of Plants per Acre

The following procedures can be used to determine percent canopy cover and number of plants per acre. These are simple methods to use for determining and documenting brush priorities as defined in Brush Management Standard and Specification (314).

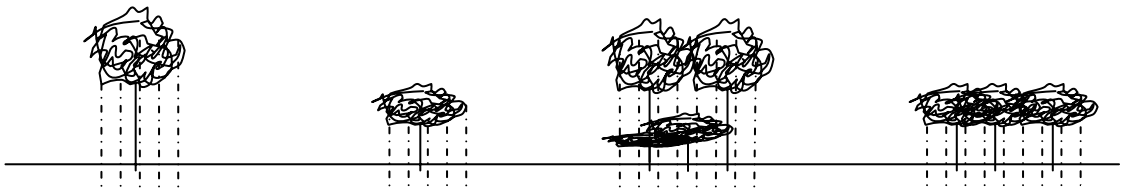
% Canopy Cover

1. % canopy will be determined along a 100 – 300 foot transect line. The line can be paced or a tape of sufficient length used.
2. The number of transects will be sufficient enough to determine an average for the field or site in concern.
3. If using tape method (100-200 ft. tape)
   - Lay out tape along a line through area where canopy is to be determined.
   - Count the number of foot markers (every 2 feet for 200 ft. tapes) that have canopy above them.
   - The number of points is the % canopy
   - *Example: Line established using 100 ft. tape. Brush canopy is counted over 35 of the 1 foot markers. Brush canopy is 35%.*
4. If using paced method.
   - Determine a line to pace by selecting a point in the distance to walk toward.
   - Place a flag at beginning point and pace toward selected point for 100 paces (approx. 300 feet)
   - Turn around and walk back towards flag, counting the number of paces in which canopy is above the point of each foot.
   - *Example: (see diagram 1) 100 paces are made along the predetermined line. 27 steps are intercepted with brush canopy above tip of foot. Brush canopy is 27 %.*

Plants per Acre

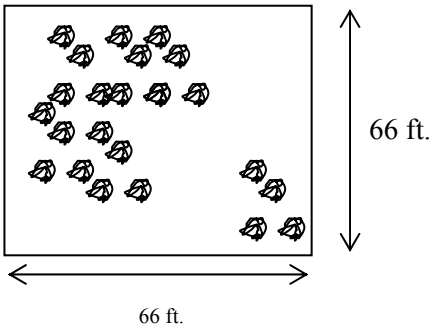
1. Mark off area 66 feet by 66 feet (1/10 of an acre). This can be done with tape or paced (approx. 22 paces)
   - Count number of plants in marked off area and multiply by 10
   - *Example: (diagram 2) 23 trees counted in the marked off area. Plants per acre is 230.*
2. Transect Method (Belt Transect)
   - Determine transect line as for canopy determinations
   - Tape or pace 300 feet (approx. 100 paces)
   - Walk back toward starting point along transect, counting number of plants within 6 feet on both sides of tape (total of 12 feet)
   - Multiply number of plants counted by 12 to get number of plants per acre.
   - *Example: (diagram 2) Number of trees counted along the line, 6 feet on both sides is 25. Number of plants per acre is (25x12) 300.*

Diagram 1. Determing Canopy Cover

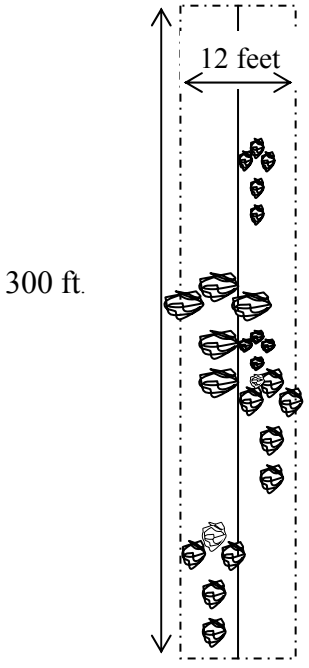


300 foot paced – count canopy above each foot at each step
27 steps intercepted above by canopy = 27% canopy cover

Diagram 2. Determing Plants per Acre



Mark off area 66 x 66 feet. (1 tenth of an acre.
Count 23 plants
23 x 10 = 230 plants per acre



Lay out Belt Transect – 300 feet long
Walk along transect line and count plants within 6 ft. on both sides
Total counted = 25.
25 x 12 = 300 plants per acre

Instructions for Worksheet

Follow procedures for establishing transects and plots and gathering data as outlined in Guidance for Determining % Canopy Cover and Number of Plants per Acre.

Using the Worksheet

This worksheet is an optional tool which can be used to inventory and document brush inventories.

This worksheet provides space for conducting inventories using % canopy cover or number of plants per acre.

% Canopy

Enter species type inventoried

Indicate transect number which should correspond with any labeling on maps.

The step or point numbers represent each step, or point, along the transect. Mark each time where the toe (if stepped) or mark on tape lands under a canopy. Only count canopy of species of concern. It is possible to have a canopy of multiple species.

The total marks for each species can be sub-totaled at the right. This provides data as to extent of each species.

Tally the marks for total canopy at bottom of each transect space and total on the right. This will be one mark for each point with canopy, regardless of the number of species. This total will not exceed 100. The subtotals by species may not equal the total canopy and may exceed 100 due to layering of multiple species.

If multiple transects are used to get an average for a field or site, the totals will need to be averaged by dividing the sum of all transect canopy totals by the number of transects completed. Enter average at top.

Number of Plants per Acre

Enter species type inventoried

Indicate method used by circling either transect (belt) or plot. Also indicate number which should correspond with any labeling on maps.

Count plants along belt transect or within plot area and tally by species. Determine subtotals for each species and total for transect or plot area.

Count plants along belt transect or within plot area and tally by species. Determine subtotals for each species and total for transect or plot area.

Calculate the number of plants per acre by using the appropriate conversion factor. If using the belt transect (300 feet long, 12 feet wide) multiply total plant count by 12. If using plot area (66 feet by 66 feet) multiply total plant count by 10. If using any other sizes, the conversion factor must be determined for the size of area and used.

If multiple transects or plot areas are used to get an average for a field or site, the totals will need to be averaged by dividing the sum of all plants per acre by the number of transects or plots completed. Enter average at right.

Client Name	*EXAMPLE*	Planner	
Field / Site		Date	

Determining Percent Canopy Cover

Total Average % Canopy for Field / Site: 27

	Species	Step or Point Number (0 – 20 – 40 – 60 – 80 – 100)	Sub Totals
Transect # 1	W. Elm	xxxxx xxxxxxxx	13
	Blackberry	xxxxx xxxxxxxxxx	14
	Buckbrush	xxxxxx	6
	Total Canopy	xxxxx xxxxx xxxxxxxx xxxxxxxxxx	27
Transect #			
	Total Canopy		
Transect #			
	Total Canopy		
Transect #			
	Total Canopy		
Transect #			
	Total Canopy		

Determining Number of Plants per Acre

Species	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Average Total Plants per Acre
Sumac	𝍸 𝍸 𝍸 III	23	𝍸 𝍸	15							
Blackberry			𝍸	10							
Total Plant Count		23	Total Plant Count	25	Total Plant Count		Total Plant Count		Total Plant Count		265
Plants Per acre	Multiply by 12 for Belt Transect / Multiply by 10 for Plot	230	Plants per Acre	300	Plants per Acre		Plants per Acre		Plants per Acre		

Client Name		Planner	
Field / Site		Date	

Determining Percent Canopy Cover

Total Average % Canopy for Field / Site

	Species	Step or Point Number: 0	20	40	60	80	100	Sub Totals
Transect #								
	Total Canopy							
Transect #								
	Total Canopy							
Transect #								
	Total Canopy							
Transect #								
	Total Canopy							
Transect #								
	Total Canopy							

Determining Number of Plants per Acre

Species	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Transect or Plot#	Subtotal	Average Total Plants per Acre
Total Plant Count			Total Plant Count		Total Plant Count		Total Plant Count		Total Plant Count		
Plants Per acre	Multiply by 12 for Belt Transect Multiply by 10 for Plot		Plants per Acre		Plants per Acre		Plants per Acre		Plants per Acre		